



DeduceQuest

Big Ideas on the Board

A SPARK & ANVIL STRATEGY BOOK

DeduceQuest – Big Ideas for Cracking Any Puzzle

A Spark & Anvil companion book – free to download and share.

Ages 9-14. Game: deduction games (Mastermind · logic grids · nonograms).

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This volume teaches strategy through the app's cast – 6 big ideas, one per chapter.

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*Deduction games – Mastermind, logic grids, nonograms – are not about luck or lucky guesses. They are about **narrowing down** until only the truth is left. The other DeduceQuest books teach the rules; this one teaches how to **crack them well**, through the cast you know. One big idea per chapter.*

Chapter 1 – Narrow, Don't Guess

Whittle has one rule above all others: **you never hunt for the answer – you narrow toward it**. A beginner throws out random guesses hoping to be lucky. Whittle treats every guess as a *tool* that cuts the number of possible answers in half.

"I do not ask, 'is this the answer?'" said Whittle. "I ask, 'what will this tell me?' Every good move shrinks the maze."

This is the mindset behind every deduction game. Before you guess, ask what the *result* of the guess will teach you – and pick the one that rules out the most possibilities, whether it is right or wrong. A wrong guess that eliminates half the options is a *great* move.

Say it out loud: *I don't hunt for the answer – I narrow toward it.*

Your turn: The "Narrow It" workbook pages show a puzzle with several possible answers. Which guess cuts the most possibilities – even if it turns out wrong?

Learning to value a "wrong" guess that teaches you a lot is the biggest shift in deduction. It turns luck into skill.

Chapter 2 – Eliminate on the Grid

Tablo lives in the logic grid, where you cross off what **cannot** be true until only the truth remains. Nona does the same in a nonogram, filling and crossing cells one clue at a time. The idea is identical: **elimination**.

"I rarely prove something true directly," said Tablo. "I prove everything *else* false – and what is left standing must be the answer."

The skill is to mark down every fact you know for certain, then follow the chains: if this is false, that must be true; if that is true, this other thing is now impossible. Careful, patient elimination cracks a grid that looks impossible at first glance.

Say it out loud: *Cross off what can't be true – what's left must be.*

Your turn: The "Eliminate" pages show a logic grid or nonogram with a few clues. Cross off the impossible cells – what does that force?

Elimination feels slow, and it is meant to. Following each "if false, then..." chain is exactly how strong solvers crack a grid.

Chapter 3 – Make Every Guess Count

Odds plays when you cannot be certain – and in games like Mastermind, you often cannot. Odds knows a deep idea: when several guesses are possible, pick the one that gives you the **most information**, splitting the remaining possibilities as evenly as you can. That way, whatever the result, you have learned the most.

"When I can't be sure," said Odds, "I make the guess that teaches me the most no matter how it turns out."

This is "information-maximizing," and it is how the best Mastermind solvers win in a handful of guesses. Do not save a clever guess for later; spend it now, while it can rule out the most.

Say it out loud: *When unsure, guess the thing that teaches me the most.*

Your turn: The "Best Guess" pages show a Mastermind position with a few options. Which guess splits the remaining possibilities most evenly?

Choosing the most-informative guess over a "hopeful" one is a subtle skill. It is the difference between solving in three guesses and solving in eight.

Chapter 4 – Test a Hypothesis

Rulewright plays the guess-the-rule games: you see some examples, you **form a hypothesis** about the hidden rule, and then you **test** it. Vary adds the scientist's trick: when you test, **change only one thing at a time**, so you know exactly what caused the result.

"A hunch is not an answer," said Rulewright. "A hunch you tested is."

The skill is to make a guess *designed to be wrong* if your hypothesis is wrong – a test that would break a bad idea. If it survives, your hypothesis is stronger; if it breaks, you learned something and form a better one. Changing one thing at a time keeps the test honest.

Say it out loud: *Form a rule, then test it – change one thing at a time.*

Your turn: The "Test It" pages show a hidden rule and some examples. What one-change test would prove your hypothesis right – or break it?

Testing a hunch instead of trusting it is real thinking. It is the same method scientists use, and it cracks the trickiest puzzles.

Chapter 5 – Assume the Opposite

Contra has the boldest trick of all: **proof by contradiction**. When you are stuck, *assume* one possibility is true, then follow it to the end. If it leads to something impossible – two things that cannot both be true – then your assumption was wrong, and you can cross it off for certain.

"I do not always prove what is true," Contra grinned. "Sometimes I assume the opposite and watch it fall apart. Then I know."

This unsticks the hardest puzzles. When elimination alone stalls, pick a cell or a possibility, assume it, and chase the consequences. A contradiction is a gift: it eliminates a whole branch at once.

Say it out loud: *Assume the opposite – if it breaks, the truth is the other way.*

Your turn: The "Assume It" pages show a stuck grid. Pick a cell, assume it, and follow it – does it lead to something impossible?

Proof by contradiction feels like magic the first time it cracks a stuck puzzle. It is one of the most powerful ideas in all of logic.

Chapter 6 – Cross-Reference the Clues

Reeve corroborates: checking each clue **against the others**, because a fact that seems small becomes powerful when it lines up with a second clue. Cogent keeps the whole thing honest, knowing the difference between a **deductive** certainty (this **MUST** be true) and an **inductive** guess (this is **PROBABLY** true) – and never confusing the two.

"One clue is a whisper," said Reeve. "Two clues that agree are a shout."

The final skill is to weave every clue together: hold all your certain facts in view at once, look for the spot where two of them overlap to force a new fact, and always know whether you have *proven* something or merely *guessed* it. That honesty is what separates a solved puzzle from a lucky one.

Say it out loud: *Line the clues up against each other – and know proof from guess.*

Everything in this book meets here: narrow instead of hunt (Chapter 1), eliminate on the grid (Chapter 2), make every guess count (Chapter 3), test your hypotheses (Chapter 4), assume the opposite when stuck (Chapter 5) – and cross-reference every clue to the certain finish.

Your turn: The "Cross-Reference" pages show a near-solved puzzle. Which two clues, put together, force the last answer?

*Weaving all the clues into one certain answer is the deepest satisfaction in deduction. Knowing you *proved* it – not guessed it – is exactly what getting good feels like.*

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